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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/511,715

03/25/2005

Hideo Hosono

042834

6338

38834

7590

01/05/2009

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EXAMINER

VADEN, KENNETH I

ART UNIT

PAPER NUMBER

1793

MAIL DATE

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/511,715	<b>Applicant(s)</b> HOSONO ET AL.	
	<b>Examiner</b> KENNETH VADEN	<b>Art Unit</b> 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 09 October 2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1 and 7-10 is/are pending in the application.
- 4a) Of the above claim(s) 8-10 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 2 and 3 is/are allowed.
- 6) ☒ Claim(s) 1 and 7 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 October 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Election/Restrictions***

Applicant remarks that the claims satisfy the combination of categories provided under 37 CFR 1.475(b)(3) and satisfy unity of invention.

This is not found persuasive because in unity of invention practice, restriction is proper in a US national stage of a PCT application where the special specification technical feature does not make a contribution over the prior art. In this application, the compound of claim 1, which is the special specification technical feature, is taught by the prior art and therefor does not make a contribution over the prior art. Therefore restriction is proper.

The requirement is still deemed proper and is therefore made FINAL.

### ***Response to Arguments***

Applicant argues that the Lacerda reference does not indicate that the material has an electronic conductance of  $10^{-5}$  S/cm or more or indicates irradiating with ultraviolet light. Figure 2 of the reference appears to indicate conductivity of the C12A7 within the claimed range of  $10^{-5}$  S/cm or more. Further the intent of Lacerda is to increase electrical conductivity C12A7. Irradiating with ultraviolet light is suggested by Hayashi.

***Claim Rejections - 35 USC § 102 and 103***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

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consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

1. Claims 1 is rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Lacerda et al., Solid State Ionics, 59 (1993), pages 257-262.
2. Regarding claim 1, Lacerda "59" teaches the use of a  $12 \text{ CaO} \cdot 7 \text{ Al}_2\text{O}_3$  compound. Lacerda "59" (page 258 para. 3 lines 1-5 and Fig 2) teaches exposing the compound to an atmosphere of 5% hydrogen and 95% nitrogen with temperatures at 800 degrees C and below. (The present specification teaches (page 6 lines 17-20 and page 7, lines 9-12) that exposing  $12 \text{ CaO} \cdot 7 \text{ Al}_2\text{O}_3$  to a combination of hydrogen concentration of 1,000 ppm or more and temperature of 800 degrees C or more results in incorporating a negative hydrogen ion concentration of  $1 \times 10^{18} \text{ cm}^{-3}$  or more).
3. Further, by exposing  $12 \text{ CaO} \cdot 7 \text{ Al}_2\text{O}_3$  compound to an atmosphere of 5% hydrogen (which exceeds 1,000 ppm hydrogen) and temperatures greater than 800 degrees C, the compound after exposure to the atmosphere and temperature would obviously have a negative hydrogen ion concentration in the range of  $1 \times 10^{18} \text{ cm}^{-3}$ , as claimed.
4. Regarding claim 1, it would have been obvious to one of ordinary skill in the art at the time of the invention that Lacerda would have also had his compound have the same range of conductivity since the temperature of 800 degrees or more C and atmosphere exceeding 1,000 ppm of hydrogen gas were used in his work.

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Claim 1 and 7 rejected under 35 U.S.C. 103(a) as being unpatentable over Lacerda "59" in view of Hayashi, et al., Nature, Vol. 419, No. 6906, pp. 462-465, 3 Oct., 2002.

Regarding claim 7, Lacerda "59" a method of producing the compound consisting of  $12 \text{ CaO} \cdot 7 \text{ Al}_2\text{O}_3$  using a heat treatment at a temperature less than 800 degrees C in an atmosphere containing 5% hydrogen gas which correlates to more than 1,000 ppm or more of hydrogen gas (page 258 para. 3 lines 1-5 and Fig 2). (The present specification teaches (page 6 lines 17-20 and page 7, lines 9-12) that a combination of hydrogen concentration of 1,000 ppm or more and temperature of 800 degrees C or less, the negative hydrogen ion concentration would be  $1 \times 10^{18} \text{ cm}^{-3}$  or more.). Lacerda does not disclose irradiating with ultraviolet ray or X-ray.

Hayashi teaches an increase of electrical conductivity by means of irradiation of  $12 \text{ CaO} \cdot 7 \text{ Al}_2\text{O}_3$ , doped with negative hydrogen ions, with ultraviolet light (page 463, lines 15-28). It would be obvious to one of ordinary skill in the art at the time of the invention to use ultraviolet light to increase the electrical conductivity of the compound, as taught by Hayashi et al.

5. Further, since Lacerda used 5% hydrogen which exceeds 1,000 ppm and temperatures greater than 800 degrees C, the compound after exposure to the atmosphere and temperature would obviously have a negative hydrogen ion in the compound in the range of  $1 \times 10^{18} \text{ cm}^{-3}$  as claimed.

Applicant cannot rely upon the foreign priority papers to overcome this rejection because a translation of said papers has not been made of record in accordance with 37 CFR 1.55. See MPEP § 201.15.

***Allowable Subject Matter***

6. Claim 2 is allowed. There is no prior art which teaches the compound  $12 \text{ SrO} \cdot 7 \text{ Al}_2\text{O}_3$  which incorporates a negative hydrogen ion concentration of  $1 \times 10^{18}$  or more in the compound and electrical conductivity of  $10^{-5} \text{ Scm}^{-1}$  or more

Claim 3 is allowed. There is no prior art that teaches the mixed compound  $12 \text{ CaO} \cdot \text{Al}_2\text{O}_3$  and  $12 \text{ SrO} \cdot 7 \text{ Al}_2 \text{ O}_3$  which incorporates a negative hydrogen ion concentration at a concentration of  $1 \times 10^{18} \text{ cm}^{-3}$  or more and electrical conductivity of  $10^{-5} \text{ Scm}^{-1}$  or more.

***Conclusion***

1. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KENNETH VADEN whose telephone number is (571)270-5824. The examiner can normally be reached on M-Th 7:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Melvin Curtis Mayes can be reached on (571)272-1234. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a



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USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

KV

12/23/2008

/Melvin Curtis Mayes/

Supervisory Patent Examiner, Art Unit 1793